Wireless *to the* **MAX** ™

ParkerVision ®

USB1500
Wireless PC LAN Adapter

FOR HOME USE

FOR MOBILE USE

FOR BUSINESS USE

USER'S GUIDE

WWW.PARKERVISION.COM

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FCC INTERFERENCE STATEMENT

FCC ID: JFE-D2D00002

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions:

This device may not cause harmful interference.

This device must accept any interference received, including interference that may cause undesired operations.

This equipment has been tested and found to comply with the limits for a Class B digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy, and if not used in accordance with the instructions, may cause harmful interference to radio communications.

If this equipment does cause harmful interference to radio/television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of more of the following measures:

Reorient or relocate the receiving antenna.

Increase the separation between the equipment and the receiver.

Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.

Consult the dealer or an experienced radio/TV technician for help.

INFORMATION TO USER: THE USER'S MANUAL OR INSTRUCTION MANUAL FOR AN INTENTIONAL OR UNINTENTIONAL RADIATOR SHALL CAUTION THE USER THAT CHANGES OR MODIFICATIONS NOT EXPRESSLY APPROVED BY THE PARTY RESPONSIBLE FOR COMPLIANCE COULD VOID THE USER'S AUTHORITY TO OPERATE THE EQUIPMENT.

"FCC RF exposure requirements: When in operation, the device should be located such that it is more than 20 cm. away from people and their person. This transmitter is restricted for use with the specific antenna(s) tested in the application for Certification. The antenna(s) used for this transmitter must not be co-located or operating in conjunction with any other antenna or transmitter."

Table of Contents

INTRODUCTION

All ParkerVision Wireless products are designed and manufactured by ParkerVision. Products are fully compliant with IEEE 802.11b standards and are optimized to provide maximum possible speed and bandwidth through your Internet connection for fastest uploads and downloads.

The distance capabilities of your wireless network equipment directly affect your signal quality. Distance capabilities are usually stated in terms of outdoor, open field reach. However, this reach is greatly diminished indoors by walls, doors, construction techniques and appliances that may block the radio signal. A wireless network adapter that tests outdoors at 200 feet could, in an indoor environment, provide 20 feet in one direction and as little as 5 or 10 feet in another direction. Factors such as building materials, floor plans and furnishings can greatly impact the signal range, quality and rate of data transmission. The extent to which your signal is affected varies greatly depending on your environment.

Wireless network products powered by D2D technology will provide better performance than other products because they can achieve open field distances of up to one mile, (when a D2D enabled adapter is used in conjunction with a D2D enabled base station). The D2D adapter alone provides 3 to 7 times the distance of other leading brands. This is sufficient to reach all rooms in most homes or small offices.

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Part I

Getting Started

The following chapters are structured as a step-by-step guide to help you connect, install and setup your ParkerVision Wireless USB LAN Adapter.

Chapter 1 :
Getting to Know Your ParkerVision Wireless LAN Adapter

This chapter introduces the main features of the ParkerVision Wireless LAN Adapter

1.1 Introduction

The ParkerVision Wireless PC LAN Adapter is an 11 Mbps IEEE 802.11b wireless USB adapter and has a standard USB port which connects to a standard computer USB port. Its maximum 11 Mbps data rate gives equivalent Ethernet speed to access corporate networks, home networks, or the Internet in a wireless environment. The ParkerVision Wireless USB LAN Adapter gives you wireless communication with any 802.11b-compliant product, allowing you to stay connected anywhere within a coverage area.

1.2 Features of the ParkerVision Wireless PC LAN Adapter

The following are the essential features of the ParkerVision Wireless USB LAN Adapter .

• *Supports data rate of 1,2, 5.5 and 11 Mbps*
• *Range of one mile in an open environment, when used with a ParkerVision wireless access point*
• *Supports Point-to-Point and Point-to-Multi-point access*
• *Seamless connectivity to wired Ethernet and computer Network LAN*
• *Helps to augment existing networks quickly and easily*
• *Direct Sequence Spread Spectrum (DSSS) technology provides robust, interference-resistant, and secure wireless connections capabilities*
• *Network connectivity minus the cost of cabling*
• *Supports, Windows 2000/XP*
• *Supports Plug and Play*
• *Ease of installation*
• *Flexibility and mobility to locate or move networked computers*

1.3 Applications

The ParkerVision Wireless LAN Adapter offers fast, reliable and cost-effective solutions for wireless networks. They include:

• Remote Access capability to Corporate Networks for email, file transfer and terminal emulation access.
• Difficult to Wire Environments - For use in historical or old buildings, asbestos installations and open areas where wiring is impossible to deploy.
• Frequently Changing Environments - For retailers, manufacturers and those who frequently rear-range the workplace or change locations.
• Temporary LAN's for Special Projects or During Peak Time - For trade shows, exhibitions

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and construction sites where a temporary network is required. For retailers, airline and shipping companies who need additional workstations during peak periods. For auditors requiring workgroups at customer sites.

- Database Access for Mobile Users - Doctors, nurses, retailers who need to access their databases on the move in a hospital, retail store, office or campus.
- SOHO (Small Office and Home Office) Users - SOHO users who need easy and quick installation of a small computer network.
- High Security Connection - Flexible, secure and quick installations, with WEP Encryption.

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Chapter 2 :
Software Installation

This chapter will guide you through the installation of the ParkerVision Software

**Make sure that you install the software onto your computer
BEFORE you install the ParkerVision Wireless USB LAN Adapter!**

The ParkerVision D2D Wireless USB LAN Adapter works with Windows XP and 2000
Operating Systems.

STEP 1

Insert the CD ROM into the CD ROM drive.
Most computers will Auto-Run the installation software, and the window below
will appear. If your computer does not Auto-Run, open up "My Computer" (this
icon is generally located on the desktop) and navigate to your CD ROM Drive.
Click this drive to see the list of files and folders located on the drive. Double
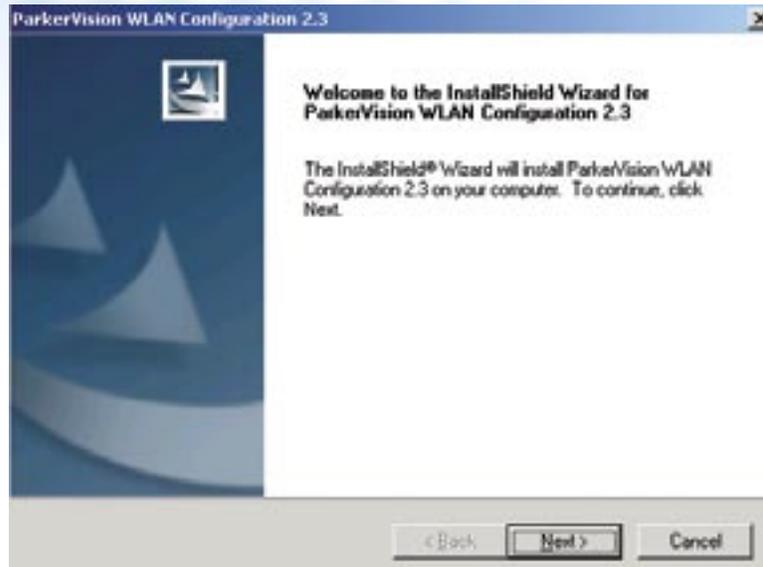click the file named "**setup.exe**"

Click **INSTALL VERSION 2.3**
The window below will open.

2.1 Installing the ParkerVision Software - Continued

The following screen will be displayed. Click **NEXT** to continue.
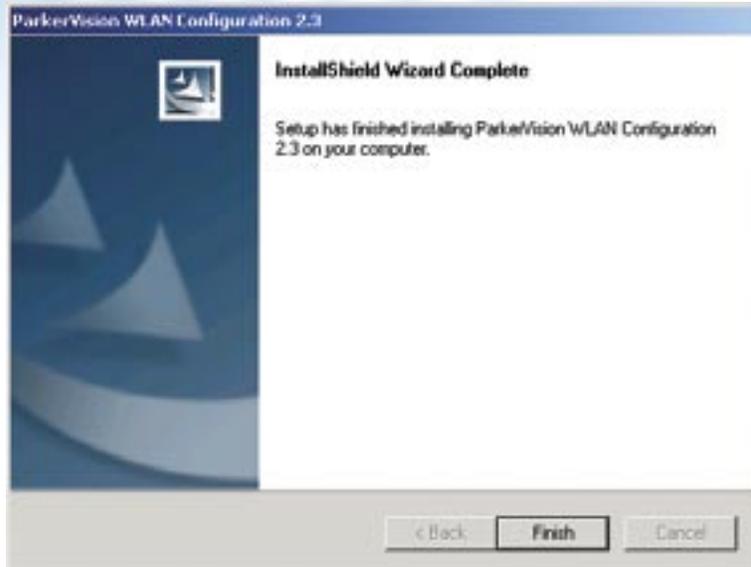

Select the install folder.
Click **NEXT** to install the ParkerVision software in the default folder as shown.
We do not recommend using an alternate location.

Click **NEXT** to continue.

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STEP 3 CONTINUED: Select **FINISH** at the following screen. This will complete the installation of the ParkerVision software.

If the screen above does not appear, RESTART your computer by clicking START, then SHUT DOWN, then RESTART. Once your computer has restarted, continue the installation by following the steps below:

Double Click this icon in the System Tray

Please connect the USB1500 Wireless LAN Cable into your computer's USB port.

Double click the ParkerVision USB1500 icon on your desktop.

The ParkerVision Utility is now running in the background and has placed an icon in the lower right System Tray.

Double-click on this icon in the System Tray as shown to the right.

NOTE: Windows 2000 Users can now go to CHAPTER 3 of this Manual to complete the hardware installation and configuration process.

For Windows XP Users:

Double clicking the ParkerVision USB1500 icon may cause the following message to appear:

*"Windows Zero Configuration was detected.
Please disable Windows Wireless Network Control."*

If you see this message, for best performance, you will now want to TURN OFF or Disable Windows' control of wireless networking. Proceed to the next page and follow the steps shown to complete this process.

USB1500 Wireless PC LAN Adapter

2.2 IMPORTANT INFORMATION FOR WINDOWS XP USERS *ONLY*

For Windows XP Users Only: In order to achieve the best possible performance of the USB1500 Wireless LAN adapter in your computer it is necessary to make a change in the way Windows XP handles your computer's wireless networking connections.

After your USB1500 LAN Adapter is installed and configured in your wireless network, you will want to follow the instructions below to make this change in the Windows configuration.

Step 1: Find the wireless networking connection icon in the System Tray, located in the lower right hand corner of your screen, or at the far end of your Start Bar if you have it docked to a location different from the screen bottom.

Double Click this icon to access the Wireless Network Connection Properties

Step 2: Click this icon, which will bring up the Properties Dialog for the wireless network connection that your computer is part of.

**Double Click the Advanced Button**

USB1500 Wireless PC LAN Adapter

2.2 IMPORTANT INFORMATION FOR WINDOWS XP USERS - Continued

Step 3: Selecting the "Advanced Button" on the previous screen will bring up the window shown below. Select the "Wireless Networks" tab, and note the box to the left of the line "Use Windows to configure my wireless network settings."

Step 4: If this box has a check mark in it, click in the box to REMOVE THE CHECK MARK.

Step 5: Click OK to close this Window.

Click Here to Remove the Check Mark
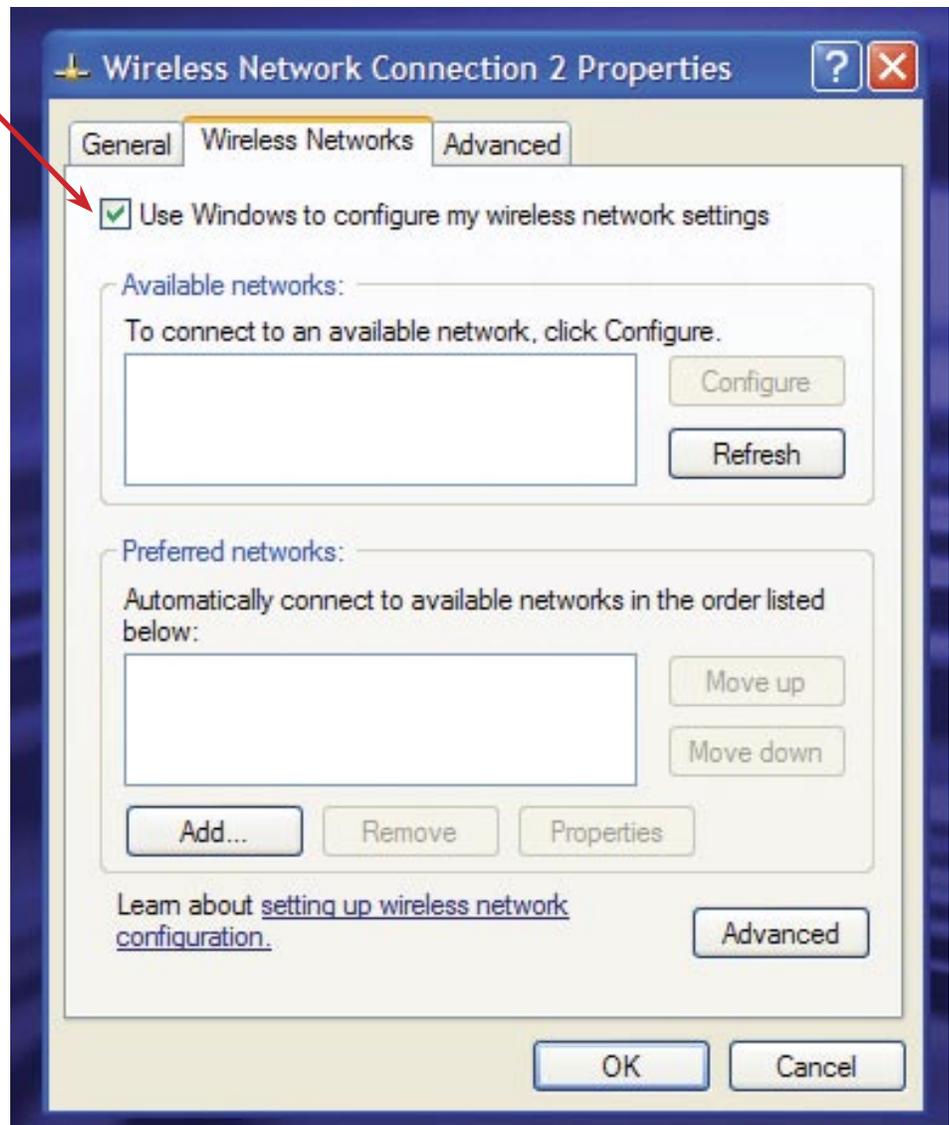
Chapter 3 :
Hardware Installation

This chapter will guide you through the installation of the ParkerVision Wireless LAN Adapter into your computer

3.1 System Requirements

• Operational USB Port
• Windows 2000/XP Operating System.
• 500 Kbytes free hard disk space (minimum) for driver and utility program installation.
• 128 MB RAM
• USB Cable

### 3.2 Installing the ParkerVision USB Wireless LAN Adapter

Note: If you installed your adapter at the end of the last chapter, you can proceed to the next page of this manual.

Follow the procedure shown next to install the ParkerVision Wireless USB LAN Adapter. Refer to the appendix for important safety instructions.

Step 1. Locate available USB port on your notebook or desktop computer.

Step 2. Connect the USB cable to the ParkerVision USB Wireless LAN adapter. Connect the other end of the cable to an open USB port on your computer.

Never force, bend or twist the USB plug into the USB port on either the computer or the USB wireless LAN adapter
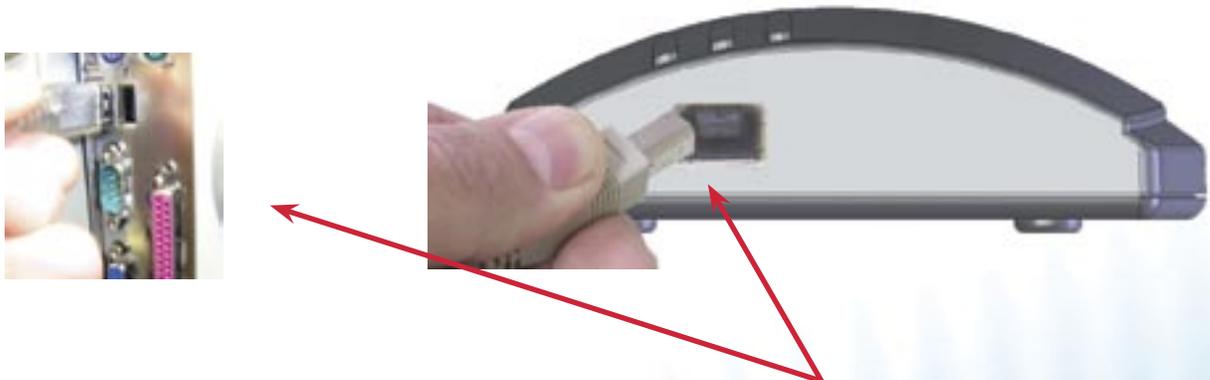
Insert the USB cable's plug into the socket on the rear of the HZ1500USB Adapter, then insert the other end into an available USB port on your computer.

The USB port does not support "hot swapping". Removing the ParkerVision Wireless LAN Adapter from the USB port when power to your computer is on may cause the software to lock. You should always disable the ParkerVision Wireless LAN Adapter prior to removal to allow Windows to log off from the network server.

LED	COLOR	STATUS	DESCRIPTION
POWER	Green	On	*The ParkerVision Wireless LAN Adapter is receiving power.*
LINK	Orange	On	*The ParkerVision Wireless LAN Adapter has a successful wireless connection.*
		Blinking	*The ParkerVision Wireless LAN Adapter is sending/receiving data through the wireless connection.*

Windows will automatically detect the HZ1500USB Wireless USB LAN Adapter and the **FOUND NEW HARDWARE** Wizard Dialog Box will appear. Follow the on-screen instructions to install the ParkerVision Wireless driver. If the Wireless LAN Adapter is not inserted properly, the following error message will appear:

To confirm proper installation of the ParkerVision-Wireless LAN Adapter:

• Right-Click **MY COMPUTER** from the Windows desktop.
• Click **PROPERTIES**
• Open **DEVICE MANAGER**
• Select the **HARDWARE** folder tab, and then click the **DEVICE MANAGER** button.
• Double-click **NETWORK ADAPTERS**. No special markers should appear next to the HZ1500USB Wireless LAN Adapter selection.
• Double-click HZ1500USB Wireless LAN Adapter. Refer to the tab labeled **GENERAL**. The **DEVICE STATUS** Window will indicate that the device is working properly.

**For Windows 2000 users, a DIGITAL SIGNATURE NOT FOUND
message may appear. Simply select YES to proceed.**

For Windows XP users, a WINDOWS LOGO TESTING NOT FOUND dialog box may appear. Click CONTINUE ANYWAY to proceed. ParkerVision Wireless D2D software has been tested to work with Windows XP, and the installation should be continued with confidence.

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Part II

Advanced Management

The following chapters will show you how to manage and configure advanced parameters of your ParkerVision USB Wireless LAN Adapter.

Chapter 4 :
ParkerVision Wireless D2D
Management Utility

This chapter will guide you through configuring the Management Utility for the LAN Adapter

4.1 Configuration

ParkerVision Wireless D2D Management Utility will assist in setting up and customizing your wireless network. The D2D Management Utility will provide you with information regarding signal quality and link conditions as well as let you modify various wireless parameters.

To access the ParkerVision-Wireless D2D Management Utility double-click the USB1500 shortcut found on the desktop. The D2D Management Utility can also be accessed by double-clicking the **ParkerVision (H)** icon that appears in the Windows System Tray (bottom-right corner of the task bar). The shortcut as well as the icon are shown below.

Desktop
Icon

SysTray
Icons

The shortcut is automatically placed on the desktop after driver installation is complete. Clicking the access icon (tool button) in the lower-right corner will open the D2D Management Utility. The ParkerVision (H) icon will appear in the System Tray only if the option is selected from the D2D Management Utility.

The **System Tray (SysTray)** can be found on one end of the task bar on the Microsoft Windows desktop. Icons for memory-resident applications that execute continuously in the background will be found here. These may include such things as the time-clock, anti-virus software, and speaker volume as shown above.

4.2 Configuration - Using the D2D/ParkerVision Management Utility

The D2D Configuration Dialog Box is displayed as shown below and consists of three primary sections. From here, different connections may be detected, configured, and stored.

Available Connections Section

Current Connections Section

Access Tray Section

The Above Sections are covered individually on the pages that follow.

4.3 AVAILABLE CONNECTIONS SECTION - Continued
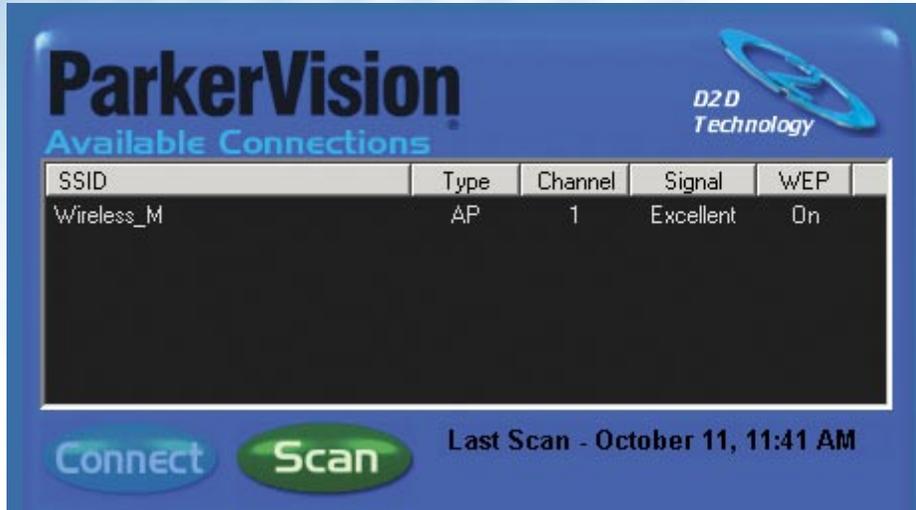
The top-most section of the D2D Configuration Dialog Box shows the available connections. The available connections will be displayed from a scan performed when the software was started, or when the scan button was clicked.

To begin using the USB1500 Wireless LAN Adapter immediately, highlight the desired available connection and select CONNECT.

The following describes information found in the **AVAILABLE CONNECTIONS** area of the configuration Dialog Box.

- **SSID:** Identifies the name of the network in use through the access point that is being utilized.

- **TYPE:** Indicates the operating mode of the ParkerVision-Wireless LAN Adapter. These modes are AP (Access Point/Infrastructure) and Ad-Hoc. The next section of the manual covers this in more detail.

- **CHANNEL:** Indicates the wireless channel that is currently in use.

- **SIGNAL:** Indicates the radio frequency signal strength.

- **WEP:** Indicates the encryption status (security setting) of the device. If WEP is off, there is no encryption. If it is on, settings options include 64-bit and 128-bit WEP.

- **LAST SCAN:** Gives the date and time stamp for the last successful scan.

- **CONNECT:** Connects to the selected network

- **SCAN:** Performs a check to find wireless channels available for connection

4.4 CURRENT CONNECTION SECTION

This section shows the connection that is currently active, giving the status of each category described in the **AVAILABLE CONNECTION SECTION** on the previous page. The **SPEED** indicates the rate of data transfer as dictated by the Access Point to which the Wireless LAN Adapter is connected.

4.5 ACCESS TRAY SECTION

If the **START IN SYSTEM TRAY** option is toggled, the **ParkerVision (H)** icon will appear in the system tray on start-up.

• Click the **www.parkervision.com** button to access the ParkerVision-Wireless home page.
• Click the **HELP** option to view the user manual
• Click **DONE** to exit the D2D Management Utility
• Click **OPTIONS** to set the options shown below

• **SSID** is broadcast by the Access Point or in Ad-Hoc by all members in the connection. Occasionally SSID is hidden and the user needs to input the correct name.

• **Channel** can be set by the user when in Ad-Hoc. In AP Mode, the Access Point sets the channel.

• **Connect** to Access Point or Ad-Hoc

• Select the appropriate **WEP** encryption option: **Off, 64-bit, or 128-bit.**

Most **PUBLIC** locations leave **WEP** off.

PRIVATE Ad-Hoc connections will default to WEP 64-bit enabled. The exact key must match the AP or Ad-Hoc member, i.e. Key 1: 3451237890. Connection is established even if the key is incorrect, however, data will not be allowed to transfer with the correct key. Four unique keys can be remembered, one is selected as the default for use when WEP is enabled. Verify with your IT professional the setting for your network.

4.6 MORE ON AD-HOC AND AP MODES

Ad-Hoc Mode (Peer-to-Peer Workgroup)
The Institute of Electrical and Electronics Engineers (IEEE) standard for wireless LAN's (WLAN's), 802.11 offers two methods for configuring a wireless network — Ad-Hoc and infrastructure (Access Point). In an Ad-Hoc network, computers are brought together as needed. In this instance, there are no fixed points to the network — each node can generally communicate with any other node. There is no Access Point involved in this configuration. This enables the set up and use of a small wireless workgroup and allows workgroup members to exchange data or share printers as supported by Microsoft Networking in the various Windows operating systems. To set up an Ad-Hoc workgroup operating with standard protocols:

• Set all stations to connect in Ad-Hoc mode (or Peer-to-Peer workgroup mode).
• Set all stations to use the same network name (or SSID).
• Set all stations to use the same wireless channel for communication.
• Set all stations to either disable the WEP encryption key, or set all stations to use an identical WEP encryption key.

AP Mode (Infrastructure Mode)
With a wireless Access Point (AP), you can put the ParkerVision-Wireless PC LAN into AP (Infrastructure) mode. It provides wireless connectivity to multiple wireless network devices within a fixed range or area of coverage, interacting with a wireless node by way of an antenna. In AP Mode, the wireless Access Point converts airwave data into wired Ethernet data, acting as a bridge between the wired LAN and wireless clients. Connecting multiple Access Points via a wired Ethernet backbone can further extend the wireless network coverage. As a mobile computing device moves out of the range of one Access Point, it moves into the range of another. As a result, wireless clients can freely roam from one Access Point domain to another and still maintain seamless network connection. To set up an AP network operating with standard protocols, do the following:

• Set all wireless stations to connect in AP mode.
• Set all stations to use the same network name (or SSID).
• Set all wireless Access Points to use the same network name (or ESSID).
• Set all stations to disable the WEP encryption key, or set all stations to use an identical WEP encryption key as used by the Access Point.
• Set up wireless channels used by individual Access Points. (It is not necessary to set channels on the stations as the stations will automatically scan through all channels for the nearest Access Point.
• You should consult your access point documentation for the available options.

4.7 MORE ON SSID

Service Set Identification (SSID)
The Service Set Identification (SSID) is a thirty-two alphanumeric character (maximum) string identifying the wireless local area network. ParkerVision-Wireless refers to the SSID as network name. For stations to communicate with each other, all stations must be configured with the same SSID. A wireless LAN consisting of nodes operating in Ad-Hoc configuration without an Access Point is called a Basic Service Set (BSS). All nodes in a BSS must use the same Basic Service Set ID (BSSID). In an AP (Access Point) configuration, multiple BSS can be configured to form an Extended Service Set (ESS). In this configuration, the Access Points are configured with the same Extended Service Set ID (ESSID). Wireless clients configured with the same ESSID can freely roam from one Access Point domain to another and still maintain a seamless connection to the network.

4.8 MORE ON WEP ENCRYPTION

Authentication and WEP Encryption
Wireless links are vulnerable to information theft. To provide a certain level of security, IEEE 802.11 standard has defined two types of authentication methods, Open System and Shared Key. Open System authentication is a null algorithm. Shared Key authentication is an algorithm where both the transmitting node and the receiving node share an authentication key to perform a checksum on the original message. By default, IEEE 802.11 wireless devices operate in an open system network. Wired Equivalent Privacy (WEP) data encryption is utilized when the wireless nodes or access points are configured to operate in Shared Key authentication mode. ParkerVision-Wireless utilizes the following 802.11b solutions: the standard based 64-bit WEP data encryption and 128-bit WEP data encryption. The 64-bit WEP data encryption method allows for a five-character (40 bits) KEY. Additionally, 24 factory-set bits are added to the 40-bit input to generate a 64-bit encryption key. (The 24 factory-set bits are not user configurable.) This encryption key will be used to encrypt/decrypt all data transmitted via the wireless interface. The 128-bit WEP data encryption method consists of 104 configurable bits. Similar to the 64-bit WEP data encryption method, the remaining 24 bits are factory set and not user configurable.

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Part III

Additional Information

This part includes Troubleshooting, Appendices, and the Index.

USB1500 Wireless PC LAN Adapter

Chapter 5 :
Troubleshooting

This chapter covers potential problems and the possible remedies. After each problem description, some instructions are provided to help you diagnose and solve the problem.

5.1 Problems During Driver Installation

PROBLEM	CORRECTIVE ACTION
The ParkerVision Wireless USB LAN Adapter is not working after the driver installation	Make sure the driver software is installed BEFORE you connect your wireless USB LAN adapter to your computer. Failure to install the software first may result in the LAN adapter being recognized incorrectly. Reonnect the USB adapter to your computer's port again. The Power and Link LED should be on if the adapter is properly inserted. Make sure there is no hardware conflict between your ParkerVision Wireless LAN Adapter and other hardware in your computer. If there is a conflict, you need to set your I/O and IRQ manually.
Windows does not auto-detect the ParkerVision Wireless USB LAN Adapter	Restart your computer. Do a manual scan of your computer hardware. In Windows 2000, click **Start, Settings, Control Panel, System, Hardware, Hardware Wizard.** In Windows XP, click **Start, Control Panel, Performance and Maintenance, System, Hardware, Device Manager.** Then Right-click on your computer name and select **Scan for Hardware Changes.** Check your USB port and make sure there is no hardware conflict. Try an alternate USB port if one is available on your computer. Contact ParkerVision Customer Support

USB1500 Wireless PC LAN Adapter

Chapter 5 - Troubleshooting - Continued

5.2 Problems With the Utility Configuration

PROBLEM	CORRECTIVE ACTION
While starting the configuration utility, the program starts up and terminates immediately with no errors.	The D2D/ParkerVision software may not recognize that the USB adapter has been connected. Try removing and re-connecting the USB plugs. Make sure that Windows is recognizing the adapter when it is inserted. Note for Windows XP users: Another reason the utility may terminate results from Windows XP controlling the adapter services at installation time. You may check this with the following steps: Click Start, Control Panel. From Control Panel, select Network, then Wireless Network Settings, and uncheck the "Use Windows to configure my wireless network settings." More information on this can be found in this manual in Section 4.11.

5.3 Problems With Access Point Settings

PROBLEM	CORRECTIVE ACTION
Problems with AP settings.	Make sure that the Access Point (AP) and the associated computer are turned on. Check to see if the access point is displayed in the available connections section of the D2D/ParkerVision Management Utility. From a Windows Command Prompt, use the Ping Command to test connectivity to the Access Point. Consult your Access Point manual for the appropriate IP Address. Consult your Access Point Manual for additional troubleshooting tips.

Chapter 5 - Troubleshooting - Continued

5.4 Problems Communicating With the Computer

PROBLEM	CORRECTIVE ACTION
The ParkerVision USB Wireless LAN Adapter client cannot communicate with the other computer on the Ethernet when the Infrastructure mode is configured.	Make sure that the AP and the associated computer are on. Make sure your computer and the AP use the same SSID. Make sure both computers are associated with the Access Point. Use the Windows Ping Command to test communications to the access point's IP Address. Consult your Access Point documentation for the address settings. If you can Ping the Access Point, you should then attempt to Ping the second computer. The IPCONFIG command will display a computer assigned IP Address when entered from a Windows Command Prompt. Use the **Site Survey** utility to verify operating radio channel has low interference. Change the AP and all the stations within the BSS to another radio channel if interference is high. Make sure that the computer and the AP share the same security option and key.
ParkerVision Status Utility Button displays No Signal.	Move your computer closer to the AP within the transmission range.
There is too much radio interference (for example microwave oven or cordless telephone) around your wireless network.	Relocate or reduce the radio interference.

Appendix A :
Network Configuration

The ParkerVision Wireless USB1500 Wireless LAN Adapter supports the same network configuration options of Legacy Ethernet LAN's as defined by the IEEE 802 standard.

The ParkerVision Wireless LAN Adapter can be configured as:

• Ad-hoc for departmental or SOHO LAN's.

• Infrastructure for enterprise LAN's.

• LAN-interconnection for point-to-point link as a campus backbone.

Ad-hoc Wireless LAN Topology

Ad-hoc Wireless LAN Topology - Continued

An Ad-hoc wireless LAN is a group of computers, each equipped with one wireless adapter, and connected as an independent wireless LAN. Computers in a specific Ad-hoc wireless LAN must be configured on the same radio channel. An Ad-hoc wireless LAN is available at a departmental scale for a branch or SOHO operation.

Wireless LAN Topology Infrastructure
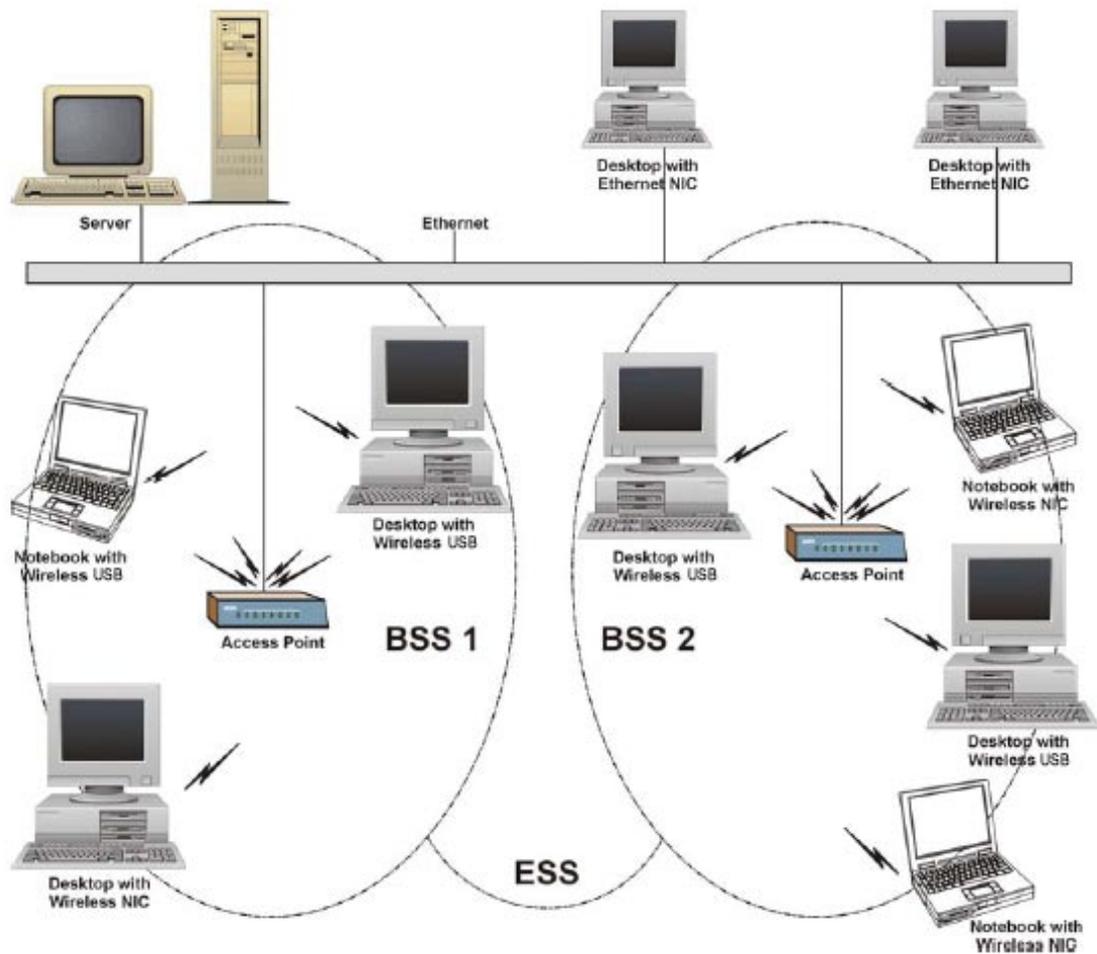
Ad-hoc Wireless LAN Topology - Continued

The ParkerVision Wireless LAN Adapter provides access to a wired LAN for wireless computers. An integrated wireless and wired LAN is called an Infrastructure configuration. A group of wireless LAN computer users and an Access Point constitute a Basic Service Set (BSS). Each wireless-equipped computer in this BSS can talk to any computer in the wired LAN infrastructure via the Access Point.

Infrastructure configuration will extend the accessibility of a wireless station to the wired LAN. Multiple Access Points will allow roaming and it will increase the transmission range. The Access Point is also able to forward data within its BSS. The effective transmission range in an Infrastructure LAN is doubled.

Effective Transmission Range Example
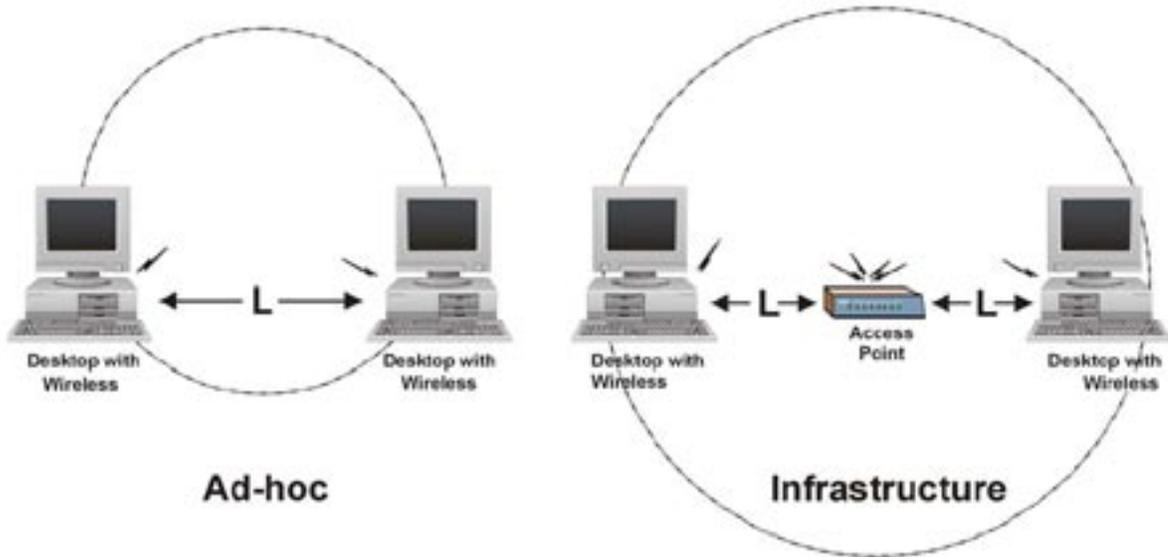
USB1500 Wireless PC LAN Adapter

Appendix B :
Hardware Specifications

General ParkerVision USB1500 Wireless LAN Adapter Specifications

Operating Systems Supported	Windows 2000 and XP
Standards	IEEE 802.11b
Host Interface	USB
Data Rates	1, 2, 5.5, 11 Mbps, with Auto-Fallback Support
Modulation	BPSK, QPSK, CCK
Range (typical)	Open Environment: 1 Mile* Closed Environment: 450 Feet*
Frequency Range	ISM Band (2.4 to 2.4835 GHz)
Channels	1-11 United States (Approved for use only in the United States)
Wireless Security (WEP)	Off, 64-bit, 128-bit

* A ParkerVision Access Point is required to achieve absolute maximum range.

Appendix C :
Uninstalling the ParkerVision Software

Should you wish to uninstall the ParkerVision Software from your Windows 2000 or XP computer, the following steps should be followed:

Step 1: Locate the file **WLAN1500 Uninstall.exe**. This file is generally located in the folder in which the ParkerVision software was installed, as shown in the example below. Select this file to run the uninstall program.
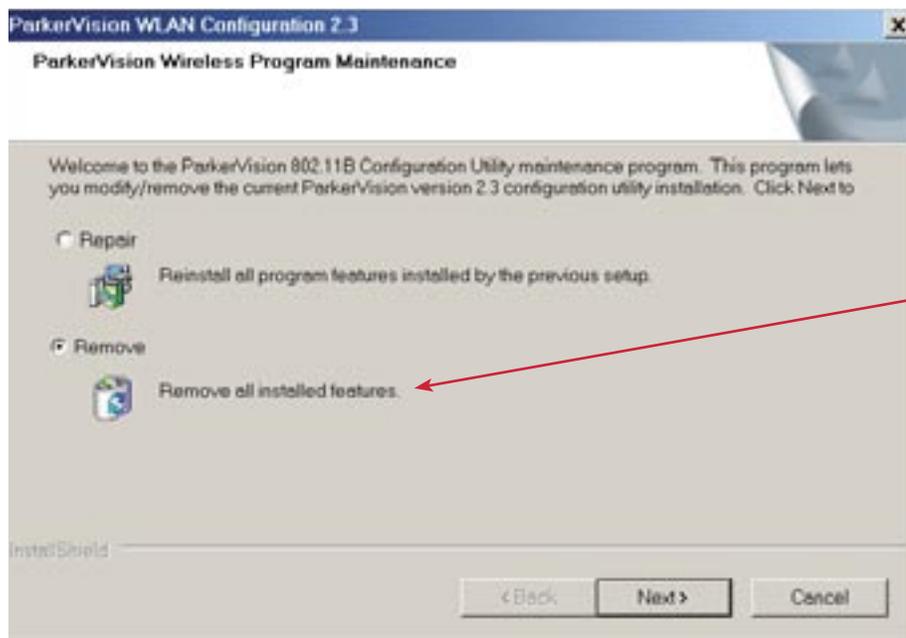
Click **REMOVE ALL INSTALLED FEATURES.**

Select **NEXT** to uninstall the software.

USB1500 Wireless PC LAN Adapter

Uninstalling the ParkerVision Software - Continued

Step 2: After the remaining files associated with the ParkerVision/D2D software are removed, you will see the following dialog box:
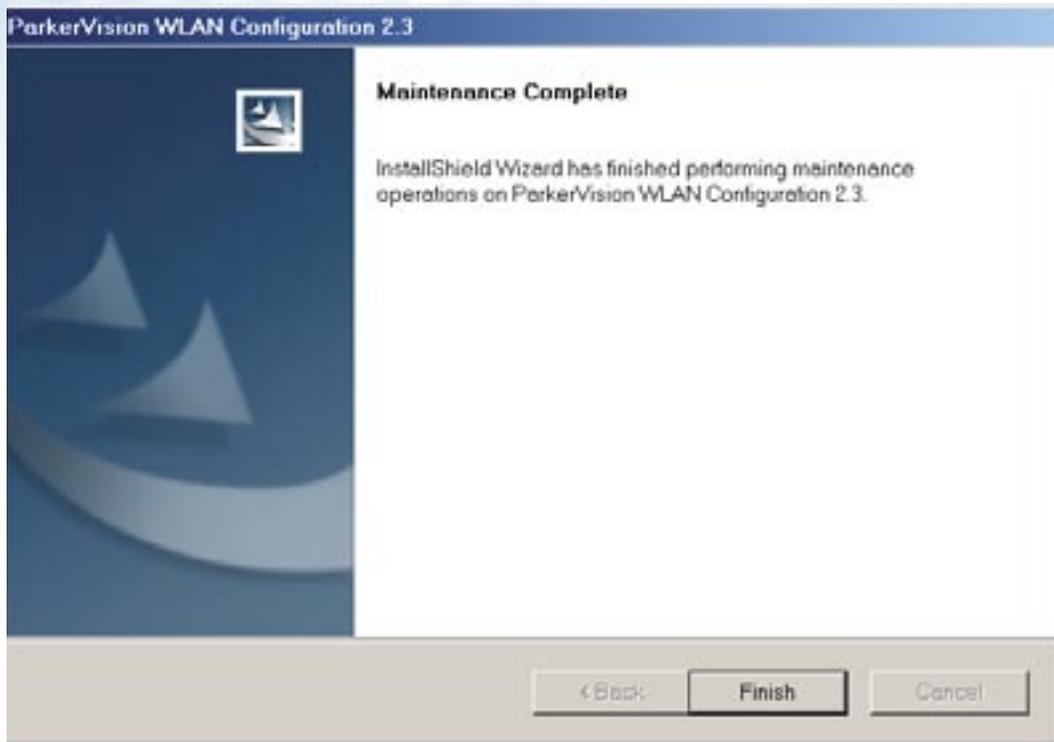
Click **Finish** to complete the uninstall of the ParkerVision software.

Index

Index

Glossary

Channel: The radio channel of a wireless network, 1 through 11.

Connect: Connect to an available network, or connect to a network using a specific profile.

Delete: Delete a named profile.

Done: Save changes and close the window.

Edit: Edit a named profile.

Name: Profile name, such as, "Work" or "Home".

Options: Used to create ad hoc and infrastructure networks, and start the ParkerVision-D2D user interface in the system tray.

Password: Enter a password, if required, to connect to a wireless network.

Profile: A record that contains information about a wireless network such as SSID, WEP keys, channel, and type of connection, e.g. AP or ad hoc.

Scan: Activates a search of all channels (1 through 11) searching for wireless networks.

Scanning…: Active indication of the scanning activity. If the radio seems to be in a state of continuous "Scan", it is likely that there are no wireless networks available.

Signal: Signal strength.

Status: State of the wireless connection, either connected or not connected.

Speed: The speed of the connection measured in Mbps, (Megabits per second).

SSID: Service Set Identifier. An identification broadcast, (or not), by an access point or ad hoc node.

Type: Type of network, either infrastructure/access point, (AP), or ad hoc.

WEP: Wired equivalent privacy. A means of encrypting the radio signals, can be 40 bit, 64 bit, or 128 bit encryption.